

A Work Project, presented as part of the requirements for the Award of a Masters
Degree in Management from the NOVA School of Business & Economics

THE APPLICATION OF THE CONTROLLABILITY PRINCIPLE IN
ELECTRICIDADE DOS AÇORES, SA

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*A Project carried out on the Accounting and Financial Reporting major, under the
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Purpose of this Work Project

Due to an increasingly complex business environment, it is more and more difficult for companies to have a centralized control¹ over their differently located activities. Therefore, companies *decentralize*.

One of the major consequences of decentralization is the creation of **responsibility centers**². One way to evaluate the performance of these centers is through the **controllability principle** which states that each responsibility center must be charged only with those costs / revenues that can be influenced by its manager (Drury, 2008). If the company follows this principle, it has to assess the performance of the responsibility center (determining its economic **contribution**³) and also the performance of its manager (assessing his/her **controllable contribution**⁴).

The application of this principle by companies has been scarcely researched (Burkett, Fischer and Schaffer, 2011). This may explain the reduced number of teaching case studies on such topic. As such, the purpose of this Work Project is to elaborate a **teaching case study, as well as its corresponding teaching note**⁵, on how the controllability principle can be applied in a real-life situation and how, in that situation, controllable and non-controllable costs/revenues can be differentiated so that the performance of the managers and responsibility centers is evaluated.

¹ Where decisions are taken by the top management, without any delegation of power to the lower management levels.

² Are units (departments/ divisions/ business units within a company) each led by a manager who is responsible for accomplishing all the objectives set up for that center.

³ Represents the contribution that the center is making to corporate overheads and profits.

⁴ Computed by deducting from total center revenues all costs controllable by the center's manager.

⁵ Proposal of guidance about how the *teaching case study* should be used in classes by the instructor.

Access was granted by Electricidade dos Açores, SA⁶, where the controllability principle is present, but not totally applied, which allowed fulfilling the purpose of this Work Project. Its outcome - this teaching case study - will be used by instructors when lecturing the topic of **Responsibility Centers and Evaluation of their Performance and of their Managers** in master courses such as Advanced Managerial Accounting and Management Control Systems.

⁶ I gratefully acknowledge the access and cooperation of Electricidade dos Açores, SA, to do this work. In particular, I appreciate the availability of Dra. Gilda Pimentel, Dra Sofia Ferreira, and in particular of Dr. Fernando Ferreira. Without their collaboration it would not have been possible to do the present work project.

Case Narrative

THE CONTROLLABILITY PRINCIPLE AT EDA

The manager of the Planning, Management Control and Regulation Department of Electricidade dos Açores, SA (henceforth named EDA), Mr. Smith⁷, was in his office at the company's headquarters in Ponta Delgada, S. Miguel⁸ in a warm late afternoon of August 2011, when he was confronted with a new concept - the controllability principle. Thus, he decided to contact several consultants and subsequently contracted one in order to study whether the company was a good candidate to implement this principle, as well as to see what major changes this implementation would bring to the actual organizational structure⁹ at EDA and to the performance evaluation of its centers as well as their managers.

1. History of EDA

EDA was constituted on August, 18th 1981, by the decision of the Azores' Regional Assembly, because the electricity sector in this region was going through some difficulties. In the origin of these difficulties were bad quality service and high costs due to the lack of coordination between the eighteen companies that were responsible for the provision of electricity in Azores until 1981, the defects in the installations and the shortage of funding. EDA was created as a state-owned company with the objective to establish and explore the public service of production, transmission/distribution, and sale/commercialization of electricity throughout the Azorean islands.

⁷ Disguised name

⁸ One of the nine Azores islands in the Atlantic ocean that belong to Portugal.

⁹ See exhibit 1.

Throughout the years, EDA was seen as a successful company, receiving trophies that recognized it as one of the largest companies in Azores, both in sales volume and in number of employees.

In the 90's of last century, several changes and investments happened at the company. In these years, EDA implemented SAP¹⁰ and SAP I-SU¹¹ which made possible to integrate all information in a unique technological platform. Also, the communications between collaborators, managers and top management started to be done with a tool which allows attaching any document, thereby eliminating paper circulation. It was also in this decade that EDA started to make investments in alternative energies, such as hydroelectric power stations, wind parks and geothermic energy, with the objective to preserve the environment. For that, EDA bought more than 50% of the capital of SOGEO (Produção de Energia Geotérmica na ilha de S.Miguel) and EEG (Produção de Energia Eólica e Hídrica) among other companies. On April, 8th 1997, EDA was transformed into a limited company.

In 2000 a major internal restructuration of the company began, which led to the extinction of operating centers per island and the creation of three major vertical business areas: Production, Transmission/Distribution and Sale/Commercialization. In 2003, ERSE (the Portuguese Energy Services Regulatory Authority) started to regulate the Azorean market, which meant that EDA was not able to set its own selling prices anymore, thereby being subject to ERSE tariffs.

It was also during the first decade of the XXI Century that the first steps to privatize the company began. In 2005, 33,92% of EDA share capital was sold to Energy and Azores' Services, S.A. (ESA), and 5,98% to employees, small subscribers and

¹⁰ Modules of Accounting, Personnel, Procurement, Property, Cash Management

¹¹ Invoicing and collection of energy and power

emigrants. In 2006, ESA increased its participation in EDA to approximately 40% of its share capital.

2. The current EDA's businesses

EDA operates in a market that has been regulated. Therefore the company was organized taking this into account. EDA is divided in three business areas that constitute the core of its regulated activity:

1. Acquisition and Production of Electricity and System Management

(corresponding to Production – see exhibit 1) which includes all processes and resources that are involved in the acquisition of electricity from external entities (mostly renewable energies' suppliers) and in the production (by its own means) of electricity from fuel and diesel oil.

2. Transmission/Distribution of Electricity

which includes all processes and resources needed in the transportation and distribution of electricity in High, Medium and Low voltage from the production plants to the delivery points of electricity to clients; this business area also includes the construction, operation and maintenance of its infrastructures.

3. Sale/Commercialization of Electricity

which sells electricity and power¹² to all Azorean clients, according to their type (such as domestic and industrial clients) and level of voltage consumed, as well as related services.

Besides these three regulated activities, the company also performs non-regulated **activities not related to electricity** which are developed by EDA collaborators. These

¹² Rate at which energy is transmitted or the amount of energy required or expended for a given unit of time.

collaborators are required by superiors to develop certain activities for EDA, but also to do specific activities of the other companies like SOGEO and EEG.

Currently EDA, S.A employs 674 workers.

3. The Market Environment

The electricity market in Continental Portugal and in its Autonomous Regions – Madeira (RAM) and Azores (RAA) – is regulated by ERSE which sets guidelines and definitions of the electricity tariffs and their components (such as Energy Tariff and the Tariff for the Use of Transmission Network). However, nowadays, this is an almost liberalized sector in Continental Portugal since, not only can the final consumers choose their electricity supplier, such as EDP Comercial, SA, Galp Power, SA, Endesa, Sucursal Portuguesa and Iberdrola, but also the tariffs distributed in High and Medium voltage are defined by the market. From the end of 2012, all electricity tariffs will be fully defined by the market in Continental Portugal

The electricity tariffs (Low voltage for Continental Portugal, Medium and Low voltage for RAA) to charge to the final consumers are annually fixed by ERSE and are calculated based on the principle of additive tariff. The latter consists of the sum of the several regulated activity tariffs associated with the services used by each client along the value chain of the electric sector (Apolinário, Felizardo, Leite Garcia, Oliveira, Trindade, Verdelho, 2006).

Until the end of 2012, the electricity suppliers with activities being regulated will only have a part in the setting of their tariffs in Continental Portugal. Besides the principle of additive tariff, ERSE sets the tariffs to generate a certain income (or profit) to each electricity supplier. This income is calculated based on each supplier's estimates

of its electricity sales, operational costs and investments. These estimates must be delivered to and previously approved by ERSE.

Yet, based on European legislation (Directives 2003/54/CE and 2009/72/CE) there was the possibility to avoid the openness of the market in some EU areas such as the areas considered to be a “small isolated network” and “isolated micro-network”. The latter is defined as “a network which annual consumption in 1996 was inferior to 500GWh and with no connection to other networks”¹³. According to this definition, the RAA and all its nine islands are considered to be an “isolated micro-network”, since the total consumption of electricity in all islands in 1996 was 337,5GWh and there is no connection to other networks. Therefore, in 2004, through the Directive 2004/920/CE, RAA was excluded from the liberalization of the electricity sector, which means that EDA is the only electricity supplier in RAA, but must sell at the electricity tariffs previously approved by ERSE.

By the end of 2012, although the tariffs will be fully defined by the market in Continental Portugal, this will not happen in the RAA. In Azores, all the tariffs of the regulated areas will continue to be defined by ERSE, with only a small change on the establishment of the tariffs of the Acquisition and Production of Electricity and System Management (corresponding to Production). In this business area, and from 2012 to 2014, such tariffs will be set based on incentives with a definition of efficiency goals. The other two business areas will keep the same regulation process.

4. The Responsibility Centers in EDA

As a consequence of the internal restructuration within EDA in 2000 there was the creation of responsibility centers, which are, nowadays, sixteen. This was what the

¹³ Directive 2003/54/CE, article 2, point 27

consultant contracted by Mr. Smith could conclude after having asked for EDA's organizational structure (see exhibit 1) and consulted some other internal documents. Also, based on these internal documents, the consultant saw that two of the centers were defined, by the company, as cost centers, whereas all the other fourteen were defined as profit centers. Although deciding the investments of all the other centers, the Top Management center was also considered a profit center by EDA (see Exhibit 2 for the complete list of the responsibility centers in EDA). According to the manager of the Planning, Management Control and Regulation Department, all of these fourteen centers are profit centers because they

“represent aggregations of activities (reflecting the organizational structure), and these aggregations allow the measurement of performance in terms of costs and revenues of each department¹⁴ of EDA.”.

Regarding the cost centers, they are generating only costs which are under the classification of Class 6 – Expenditures of the SNC (Sistema de Normalização Contabilística which is the Portuguese adaptation of the IASB financial reporting standards framework). Regarding the profit centers they are generating costs that are under the classification of Class 6 of the SNC and revenues under the classification of Class 7 – Revenues of the SNC.

None of the investment decisions are being taken in the centers itself. The decisions of EDA's investments are analyzed and studied in a specific center (Planning and Investment Analysis) and then are inserted in the Annual Business Plan of the company, which must be approved by the top management and afterwards by the shareholders' General Assembly.

¹⁴ Which corresponds to responsibility center in EDA.

5. The Controllability Principle

In order to analyze the possibility to implement the controllability principle in EDA, the consultant needed to know what influence the managers have in both revenues and costs generation, with the objective of seeing what is controllable and non-controllable by them.

The consultant decided to concentrate first on the three main business areas. Since these areas are regulated, the consultant wanted to know to what extent these areas are really regulated. For that reason he asked Mr. Smith if the influence of the managers of the three areas is on revenues only, or also on costs. Mr. Smith provided a Profit & Loss Account per area (see Exhibit 3) in order for the consultant to study the costs and revenues of the three main areas.

When analyzing the P&L Account, the consultant identified three items that are major contributors to each area's costs:

- In the Production area, the Cost of Goods Sold and Materials Consumed, Expenses with Miscellaneous Services and Personnel Expenses.
- In the Transmission/Distribution and the Sale/Commercialization areas, Expenses with Miscellaneous Services and Personnel Expenses.

The consultant then found that in the case of the Personnel Expenses, the manager of each area can only decide on the quantity of the Personnel resources (number of employees) used in each area; the decision regarding the salary of every worker of the different business areas must be approved by the Human Resources Management center. Considering the Expenses with Miscellaneous Services, the manager of each area is only able to decide on the quantity of these services. The choice of the suppliers of such services, when they imply a contract (for example phones, insurance), as well as their

purchase price, have to be decided by the top management. If the purchase does not imply a contract, the decision on suppliers and the purchasing prices is the responsibility of several centers (for example, if the manager needs a book or some technical documentation he/she asks for it to the Secretariat of the Board of Directors and then this center buys what was demanded; if the manager needs some office material he/she makes asks for it to the Procurement center, and then this center buys it.) Finally, regarding the Costs of Goods Sold and Materials Consumed, the manager of the area is only responsible for deciding the quantity of raw materials to be used by the center (such as fuel and reserve pieces); every decision on the acquisition of these materials (including deciding the suppliers and the purchasing price) is the responsibility of the Procurement center.

Subsequently the consultant looked at the revenues of the three main business areas, particularly the ones in Sales and Services. Such revenues of the Production, Transmission/Distribution and Sale/Commercialization centers are regulated by ERSE through the setting of tariffs. The values of Sales and Services that appear in Exhibit 3 (P&L per area) are generated through the allocation of the total sales to the final consumers to the three main areas. This means that in case of the Production area, the Sales and Services are calculated by multiplying the total consumption of electricity by the final consumers of EDA by the Energy Tariff, the Tariff for the Use of Transmission Network and the Tariff for the Global Use of System (which are established only for the Production area), the Sales and Services of the Transmission/Distribution area are calculated based on that same total consumption and the Tariff for the Use of Distribution Networks (this tariff is only set up for this area), and finally the Sales and

Services of the Sale/Commercialization area are based on the total consumption and the Retail Commercial tariff (this tariff is only considered in this area).

After the analysis of the three main business areas, the consultant decided to concentrate on the other centers classified as profit centers at EDA. Regarding their revenues, they come basically from services provided. These can be related with either the assignment of qualified staff of EDA to the other companies that belong to EDA (for example SOGEO and EEG) or with specific services provided to the latter (like accounting, payroll, and cash management). EDA supports the costs, the main being Personnel Expenses, with these services. For that reason when assigning one of its workers, EDA charges the cost associated with that worker to the company he/she was assigned using labor/hour rates.

Concerning the costs of these other profit centers, the consultant found out that they were the same as the costs of the three main business areas, meaning that, all of these other profit centers were generating mostly Cost of Goods Sold and Materials Consumed, Expenses with Miscellaneous Services and Personnel Expenses. But, when considering the costs, it was very difficult for the consultant to make a generalized analysis of the influence of the managers on the generation of costs, since it depended on the center. So he decided to make the following scheme about the decisions on costs:

Centers	Decision on suppliers and purchasing prices in all centers including their own			Decision on quantity of resources in their own center
	Personnel Expenses	Cost of Goods Sold and Materials Consumed	Expenses with Miscellaneous Services	
Top Management; Secretariat of the Board; Information Systems; Finance and Insurance; Construction of Infrastructures and Equipment Centers			×	×
Human Resource Management	×			×
Procurement		×	×	×
Auditing; Planning, Management Control and Regulation; Other Entities; Electrical Management Systems				×

(Source: Adapted from internal documents)

Finally, the consultant analyzed the costs of the two cost centers. They also were generating mostly Cost of Goods Sold and Materials Consumed, Expenses with Miscellaneous Services and Personnel Expenses, which means that the analysis of these costs had already been done by the consultant: these two managers did not have any control over purchasing prices and over the choice of suppliers in any of the costs of their centers.

After this analysis of costs and revenues in EDA, the consultant had a better idea on what was controllable and what was not controllable by the managers. Regarding the managers responsible for the three main areas, their influence was very restrict, i.e., they were not able to influence either the quantity or the price of the electricity sold, but they had control on the quantity of the resources that were consumed by their center, albeit none over the price of those resources. Considering the managers of the rest of the centers, they all control the quantity of units in the revenues. But, when considering the costs, it was very difficult for the consultant to generalize what was controllable and non-controllable by the managers, since it depended on the center.

6. Proposed Assignment Questions

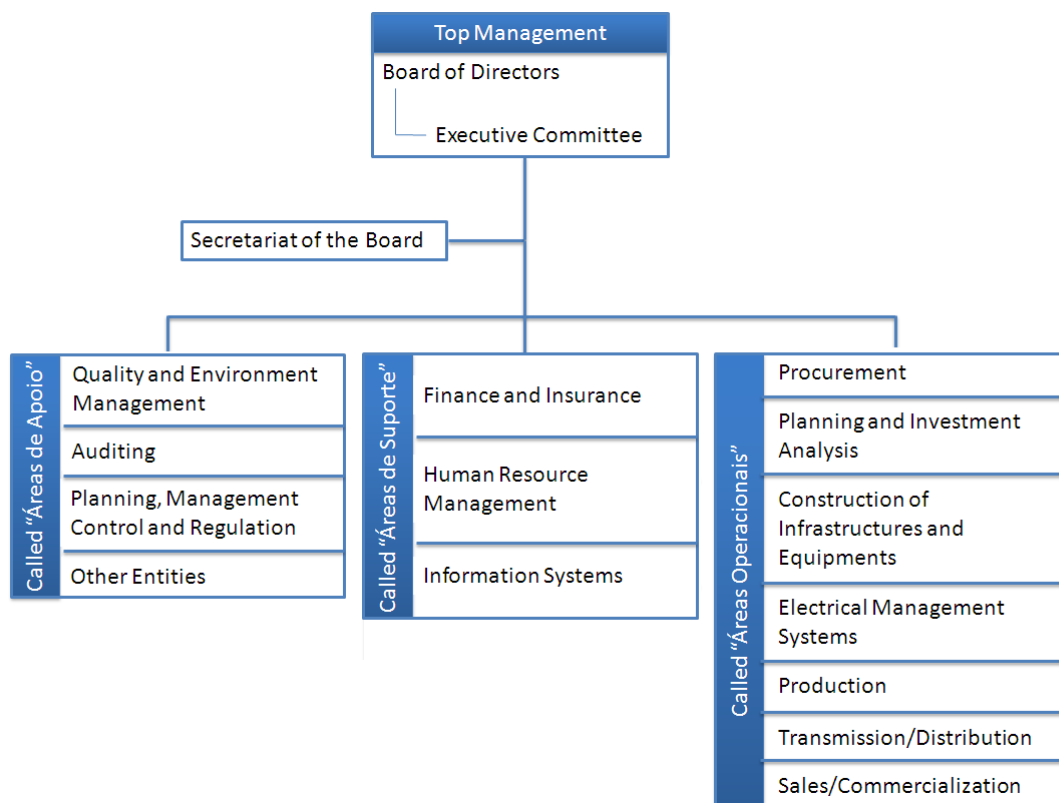
After analyzing all the collected information from EDA, the consultant hired you to assist him in preparing the answer to the request of Mr. Smith. As such, discuss the following questions:

1. Based on the information (theoretical and of EDA) you know already about responsibility centers:
 - 1.1. Do you think that the Production, Transmission/Distribution and Sales/Commercialization Centers are profit centers? Why?

- 1.2. What about the other 11 responsibility centers that EDA classifies as profit centers? Do you agree with this classification? Why?
- 1.3. There are no transfer prices in EDA. Consider the hypothesis of implementing them among the three main business areas:
 - 1.3.1. Could the classification of the three centers be affected by this decision? Why and how?
2. Now consider the information (theoretical and of EDA) you know about the **controllability principle**:
 - 2.1. How would you evaluate the manager of each profit center?
 - 2.2. What would you change in the internal documents (for example the P&L Account) to make it easy to distinguish between controllable and non-controllable items?
 - 2.3. Consider again the hypothesis of implementing transfer prices between the three main business areas:
 - 2.3.1. How would this decision affect the managers' influence on the generation of revenues and costs?

Exhibits

Exhibit 1 – EDA’s organizational structure



(Source: Adapted from internal documents)

Exhibit 2 – List of EDA’s Centers in 2010

Name of the Center	Type of Center
Top Management	Profit Center
Secretariat of the Board	Profit Center
Quality and Environment Management	Cost Center
Auditing	Profit Center
Planning, Management Control and Regulation	Profit Center
Other Entities	Profit Center
Finance and Insurance	Profit Center
Human Resource Management	Profit Center
Information Systems	Profit Center
Procurement	Profit Center
Planning and Investment Analysis	Cost Center
Construction of Infrastructures and Equipments	Profit Center
Electrical Management Systems	Profit Center
Production	Profit Center
Transmission/Distribution	Profit Center
Sales/Commercialization	Profit Center

(Source: Adapted from internal documents)

Exhibit 3 – Profit & Loss Accounts of the three main business areas

Item	Year 2010			
	Production	Transmission/ Distribution	Sale/ Commercialization	Total
Sales and Services	130.805.604	33.507.811	4.649.783	168.963.199
Operating Subsidies	1.570	1.863	169.895	173.328
Gains and Losses in Subsidiaries, Associates and Joint Ventures	8.574.482	0	0	8.574.482
Changes in Inventories of Production	0	0	0	0
Own Work Entity	1.462.299	8.552.996	23.782	10.039.076
Cost of Goods Sold and Materials Consumed	87.243.379	5.861.542	4.897	93.109.818
Expenses with Miscellaneous Services	4.276.278	6.136.695	2.782.344	13.195.317
Personnel Expenses	11.674.808	11.508.515	2.978.709	26.162.032
Inventory Impairment (losses / reversals)	8.240	51.301	447	59.989
Impairment of Receivables (losses / reversals)	0	0	177.152	177.152
Impairment of Investments not depreciable / amortizable (losses / reversals)	0	0	0	0
Provisions (Increases / Decreases)	0	0	0	0
Increases / Decreases in Fair Value	9.894	0	0	9.894
Other Income and Gains	4.964.556	866.342	609.722	6.440.620
Other Expenses and Losses	849.331	595.681	15.929	1.460.940
Gross Margin	43.562.225	27.592.338	4.644.714	75.799.277
EBITDA - Earnings Before Interest, Taxes, Depreciation and Amortization	41.746.582	18.775.277	-506.296	60.015.563
Spending / Reversal of Depreciation and Amortization	12.461.119	8.253.667	374.734	21.089.521
Impairment of Depreciable Investment / Installment (losses / reversals)	0	0	0	0
EBIT - Operating Income (Earnings Before Interest and Taxes)	29.285.463	10.521.610	-881.030	38.926.042
Interest Income obtained	510.828	369.285	14.999	895.112
Interest and Similar Expenses Supported	3.580.148	2.583.453	111.677	6.275.278
Income Before Taxes	26.216.143	8.307.442	-977.709	33.545.876
Income tax period	2.448.921	1.029.937	-1.588	3.477.270
Net Income	23.767.222	7.277.504	-976.121	30.068.606

(Source: Adapted from internal documents)

Teaching Note

Overview:

Mr. Smith, the manager of the Planning, Management Control and Regulation Department, was confronted by the concept of controllability principle and wanted to know if EDA was a good candidate to apply it. To do this, Mr. Smith contracted an external consultant. The latter asked for EDA's current organizational structure and for information about the responsibility centers created at EDA, since this is an important issue when studying the controllability principle. Internal information on how the managers can and cannot make decisions in their centers was also required by the consultant in order to assess the level of influence that those managers have on the generation of revenues and costs of their centers in EDA. After analyzing all the collected information, the consultant hired the students to help him on how to answer the request made by Mr. Smith.

Teaching Objectives:

This teaching case study can be used in masters' courses in Accounting, such as Advanced Managerial Accounting and Management Control Systems, to give the students the chance:

- 1) To understand how responsibility centers should be defined in a practical way;
- 2) To know all the different types of responsibility centers and how they are applied in a practical way;
- 3) To see how the controllability principle can be applied in a company;
- 4) To explore the topic of transfer prices;
- 5) And finally, to develop their skills in making improvement proposals and in discussing cases.

Results of the test of the case study:

This case was tested in two different situations. The first one was with the person at EDA with whom the access to the company was negotiated in order to see if the information was all correct. The feedback was very positive, aside from some small aspects that needed to be changed. The second one was tested by students of different nationalities and from different universities doing their master degree at NOVA School of Business & Economics. Two of the students were foreign: one was a French student, 23 years old, from Emlyon Business School and student of the Master in Management, specialization in Marketing; the other was a British student, 22 years old, from the London Business School, student of the Master in Management; the third student was Portuguese, 22 years old, from Nova SBE, student of the Master in Finance and with Accounting background, based on the attendance of Accounting courses in both Undergraduate in Economics and Master in Finance.

The test with students was very important in order to know if the information in the case was sufficient to answer the assignment questions, if the information was understandable, and to see what major topics the students refer when answering the questions. Some parts that were included in the text of the teaching case study read by the three students were taken out from it, because the feedback from them was that it was confusing, and since those parts were not relevant for the case itself, they were deleted.

In what concerns the assignment questions about responsibility centers, there was some difficulty from the students with no Accounting background to simply define what those centers consist in. Since this case is for students that are attending courses like Advanced Managerial Accounting and Management Control Systems, the students will

be able to know the main concepts of the main topic of this Work Project, and therefore to apply it correctly when answering those questions. In fact, this was what happened with the student that attended some of these courses.

The students did not have any difficulty to answer the questions regarding the controllability principle, since it is an easy concept to understand and apply. In their answers, the students referred most of the topics that are suggested in the case analysis.

Basic Issues:

1. Responsibility Centers: **Cost Centers; Profit Centers; Investment Centers**
2. Controllability Principle: **Controllable contribution** (to evaluate the performance of the manager); **Economic contribution** (to evaluate the performance of an investment or profit center)

Case Analysis

1. **Based on the information (theoretical and of EDA) you know already about responsibility centers:**

- 1.1. **Do you think that the Production, Transmission/Distribution and Sales/Commercialization Centers are profit centers? Why?**

Theoretical information to consider:

The instructor must lead the students to revise firstly the definition of responsibility centers which consist on units (departments/divisions/business units within a company) each one led by a manager who is responsible for accomplishing all the objectives set up for that center. Secondly, the students should revise the definitions of cost center and a profit center, such as those presented by Atkinson, Kaplan, Matsumura and Young (2007, p. 584 and 586):

- *“Cost Centers are responsibility centers in which the employees control costs but do not control revenues or investment levels”*
- *“Profit Centers are responsibility centers in which managers and other employees control both revenues and the costs of the products or services they deliver. (...) senior management, not the responsibility center management, controls the level of investment in the responsibility center.”*

If the students do not add anything else to the above definition of profit centers, the instructor must motivate them to be more specific and think whether in this type of responsibility center, and according to Drury (2008), the managers are normally free to set selling prices, select suppliers, accept prices of services that must be acquired, etc.

Information of the case to consider:

Students must argue that there are three main aspects to take into consideration in this question:

- The managers of Production, Transmission/Distribution and Sales/Commercialization centers control the component of the costs related to the quantities of resources used in these centers;
- Their activities are regulated, which means that although these centers have revenues, their managers do not control them because the selling tariffs are set and regulated by ERSE ;
- The investment decisions related to the three business areas are taken at the top management level.

Conclusions:

Students must answer that, based on the definitions of what is a cost center and a profit center, the centers responsible for the three main business areas of EDA are not

correctly classified. The major problem is the fact the managers do not control the revenues, and for this reason they cannot be considered a profit center. So, the Production, Transmission/Distribution and Sales/Commercialization centers should be considered cost centers since the managers only control the quantity of resources of costs used by their centers.

1.2.What about the other 11 responsibility centers that EDA classifies as profit centers? Do you agree with this classification? Why?

At this point, the instructor must guide the students to distinguish between the Top Management center and the other 10 centers that are classified as profit centers at EDA according to exhibit 2 of the teaching case study.

Theoretical information to consider:

To help students understand why they need to make this distinction, the instructor must ask for the definition of an investment center. Students might refer the definition included in Atkinson, Kaplan, Matsumura and Young (2007, p. 587):

- *“Investment Centers are responsibility centers in which the managers and other employees control revenues, costs, and the level of investment.”*

The students can also add what Drury (2008, p. 396) mentions about this type of responsibility center:

- *“Investment Centers represent the highest level of managerial autonomy. They include the company as a whole, operating subsidiaries, operating groups and divisions.”*

Information of the case to consider:

When discussing this question among them, the students must point out the following aspects that have to be taken into account:

- The Top Management center at EDA is considered a profit center but must approve all the investment decisions that occur in the company;
- The other 10 centers typified as profit centers by the company are led by managers that are responsible for costs and some revenues, whereas the levels of investment are imposed by the top management.

Conclusions:

Based on what was discussed before, the students must firstly conclude that the Top Management center is not correctly classified. They must add that this incorrect classification is due to the fact that such center is the top of the organization and represents the highest level of managerial autonomy at EDA. In addition, all the investment decisions are taken in this center by EDA's top management. Therefore the Top Management center must not be considered a profit center but instead an investment center.

The second conclusion from the students must be that the other 10 centers that EDA considers as profit centers are well defined. Their managers control the quantity of resources consumed and the revenues that the center generates, and the decisions on investments are taken at the top management level.

1.3. There are no transfer prices in EDA. Consider the hypothesis of implementing them among the three main business areas:

1.3.1. Could the classification of the three centers be affected by this decision? Why and how?

Theoretical information to consider:

When answering this question the students must go back to the definition of a transfer price learnt in classes, in other words, the price that one division charges for a

product or service supplied to another division from the same organization. The instructor can then read the following sentence from Drury and El-Shishini (2005, p. 10):

- *“This practice [transfer prices] creates pseudo-divisionalized profit centers. Separate profits can be reported for each division, but the divisional managers have limited authority for sourcing and pricing decision.”*

Conclusions:

The students must realize that the classification of the three centers responsible for the main business areas in EDA will change if the practice of transfer pricing is applied between them. However, if applied, the students must acknowledge that the true requirements of a profit center will not be met. Therefore, the three centers should be classified as “Pseudo-Profit centers”, since, according to Drury and El-Shishini (2005), their managers will have a limited control on choosing the suppliers and the selling price to external clients will still be set by ERSE, which means that the managers of these areas will only have authority on the internal price decisions – the transfer prices.

2. Now consider the information (theoretical and of EDA) you know about the controllability principle:

2.1. How would you evaluate the manager of each profit center?

In this question, the instructor should guide the students to consider the profit centers in EDA that are correctly classified as profit centers: all centers except Production, Transmission/Distribution, Sales/Commercialization, Top Management, Quality and Environment Management and Planning and Investment Analysis centers.

Theoretical information to consider:

This question allows the students to revise and discuss what is controllable and non-controllable in these centers. To consolidate the discussion of the students and to help them to achieve a conclusion, the instructor can read the following sentence from Drury and El-Shishini (2005, p. 20):

- *“If the manager can control the quantity but not the price paid for the services bought, then the costs are partially controllable. Only the difference between actual and budgeted expenditure that is due to the usage of these services should be identified with the manager.”*

This question also favors the discussion of performance measurements and what should be included in those measurements. To finalize the discussion and to reach a conclusion, the instructor can add the following information from Atkinson, Kaplan, Matsumura and Young (2007, p.587):

- *“(...) organizations should not rely on profit center financial results for performance evaluations. Instead, detailed performance evaluations should include quality, material use (yield), labor use (yield), and service measures that the local units can control.”*

Conclusions:

After the discussion, the students should be able to conclude that, since all managers of the correctly classified profit centers in EDA are responsible for controlling the quantity of resources consumed and revenues, they should be held responsible for any variance from the actual to the budgeted value of quantity. The manager must justify any of such variances and therefore the performance evaluation should take that into consideration. Also, after the discussion the students should mention some other

measurements that can be considered in the evaluation of the managers, such as quality of the service (mainly in the areas that deal with clients and suppliers), quality of the materials, satisfaction of the employees, among others.

2.2.What would you change in the internal documents (for example the P&L Account) to make it easy to distinguish between controllable and non-controllable items?

In this question the students must be able to acknowledge the difficulty to distinguish between controllable and non-controllable items, and therefore propose a P&L Account per center considering the separation of controllable and non-controllable items.

The instructor should guide the students to comprehend the difference between controllable contribution and contribution of an investment or profit center, and therefore the students should revise the definitions of Drury (2008, p. 480), which states that the **controllable contribution** “*measures the ability of managers to use the resources under their control effectively*”. On the other hand, the **contribution of an investment or profit center**¹⁵ represents the contribution that such center is making to corporate overheads and profits and is calculated by deducting from the controllable contribution the costs that are attributable to such centers but not controlled by their managers.

After understanding the major changes that the P&L will suffer, the students must discuss on how to calculate the controllable costs in EDA. Since the managers are only responsible for controlling the quantity, the division should be charged with the actual quantity at the budgeted cost.

¹⁵ Divisional contribution in Drury (2008)’s terms.

Finally, after all the discussion, the students should be able to know the major contribution of doing this P&L. By doing this separation on the P&L Account it is easier to see what is controllable by the manager, and therefore easier to measure his/her performance, and what is non-controllable by him/her.

2.3.Consider again the hypothesis of implementing transfer prices between the three main business areas:

2.3.1. How would this decision affect the managers' influence on the generation of revenues and costs?

The students must go back to the definition of transfer prices that was discussed before, and the instructor must lead them to talk about the changes that this practice would bring to the company if it was implemented. There are two possible situations in this discussion that would depend on the power of the managers to set the transfer price.

The students can conclude after the discussion that if the top management is the one to establish the transfer price (situation that is more likely to happen at EDA), the manager still does not have any control over that price, and therefore her/his influence on the generation of revenues and costs is the same. But, if the top management gives power to the managers of the three main areas to establish a transfer price without interfering, the students must conclude that:

1. The manager has influence on the transfer price to be set, and therefore it becomes a controllable item by the managers of the three main areas;
2. The decision on transfer price must be taken into consideration on the evaluation of the managers;
3. The center should be considered a “Pseudo-Profit center”.

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